

Remarks

Claims 1-7, and 10-12 are pending in the application. Favorable reconsideration of the application is respectfully requested.

I. REJECTIONS OF CLAIMS 1-7, AND 10-12 UNDER 35 U.S.C. §§ 102 AND 103

Claims 1, 2, 6, 7, and 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,025,203 ("Edwards"). Claims 11 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Edwards in view of U.S. Patent No. 4,757,542 ("Neahr"). Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Edwards in view of U.S. Patent No. 3,604,885 ("Inoue"). Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Edwards in view of U.S. Patent No. 4,887,021 ("Walker"). All pending claims are believed to be allowable for at least the following reasons. Withdrawal of the rejection is respectfully requested.

Independent claims 1 and 10-12 are generally directed to an overvoltage protection circuitry. Specifically, the invention defined in independent claim 1 requires that "the switch control circuitry comprises a three terminal buckling DC voltage regulator ... for providing a control signal to the switch circuitry," and that "an output of the voltage regulator is coupled to the supply voltage node such that a change in the supply voltage varies an output current from the voltage regulator, and thereby varies an input current to the voltage regulator from which the control signal is generated." All other rejected independent claims, i.e., claims 10-12 contain recitations similar to those of claim 1 regarding the above-identified voltage regulator.

The Edwards Patent

The Examiner now cited the Edwards patent as a primary reference as describing, *inter alia*, (i) that a change in the supply voltage varies an output current from the voltage regulator, and thereby varies an input current to the voltage regulator, and (ii) that the switch control circuitry comprises a three terminal buckling DC voltage regulator. Applicants respectfully disagree. It is respectfully submitted that the Edwards patent fails to teach or suggest at least the above-identified features (i) and (ii) of the invention.

First, the Edwards patent fails to teach or suggest the claimed current-current converting feature, i.e., "an output of the voltage regulator [which] is coupled to the supply voltage node such that a change in the supply voltage varies an output current from the voltage regulator, and thereby varies an input current to the voltage regulator from which the control signal is generated. The Office Action asserts that the voltage regulator 16 corresponds to the claimed bucking regulator, in which a change in the supply voltage varies an output current ... , and

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thereby varies an input current However, the voltage regulator 16 receives a voltage change as an input. As understood by those skilled in the art, in general, differential amplifiers compare one voltage with another voltage.

Specifically, the differential amplifier 26 receives a voltage change provided by a voltage divider consisting of the resistors 22 and 24, at a non-inverting input (indicated by "+" in Fig. 1). The differential amplifier 26 then compares the input voltage at the non-inverting input with the reference voltage 28 at an inverting input (indicated by "-" in Fig. 1). In short, Edwards' regulator functions as a voltage-current converter, whereas the claimed voltage regulator functions as a current-current converter. Therefore, Edwards' regulator 16 including the differential amplifier 26 should not be interpreted as disclosing a regulator in which "a change in the supply voltage varies an output current ... , and thereby varies an input current ..." as claimed.

Second, the Edwards patent fails to teach or suggest use of a three terminal bucking DC voltage regulator as claimed. As widely appreciated by those skilled in the art, a bucking regulator is a type of a regulator which creates a pulsating current, and then averages the pulsating current by an LC filter to produce a smooth DC output. Thus, in a bucking regulator, the average input current is equal to the average output current since the input current energy is held by the LC filter and then ultimately output without power loss (at least in an ideal condition). See, for example, Fig. 2 and its corresponding description in the attached copy of pages 107-110 of "Power Semiconductor Applications" published by Philips Semiconductors (available from <http://www.semiconductors.philips.com/acrobat/applicationnotes/APPCHP1.pdf>).

By contrast, the regulator 16 in the Edwards patent has no LC filter. Nor does the regulator 16 create a pulsating current, of which energy is held by an LC filter. Further, Edwards' regulator has no switching device to create a pulsating current to be smoothed by an LC filter. In short, the Edwards regulator 16 functions as a voltage-controlled resistor. It simply does not function as a bucking regulator as claimed. Therefore, the Edwards patent cannot be said to anticipate the claimed invention.

Other cited references, namely, Neahr, Inoue, and Walker are not relevant to the above-discussed features (i) and (ii). Thus, these references do not cure the deficiencies of Edwards.

In view of the foregoing, the inventions defined in independent claims 1, and 10-12 and their dependent claims are believed to be patentable over the cited art. Withdrawal of the rejections is respectfully requested.

II. CONCLUSION

Applicants believe that all pending claims are in condition for allowance, and respectfully request a Notice of Allowance at an early date. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 510-843-6200, ext. 245.

Respectfully submitted,
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Limited Recognition under 37 CFR § 10.9(b)

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